UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,604	06/26/2003	Cesar A. Gonzalez	VRT0055US	4147

60429 7590 11/07/2007

CAMPBELL STEPHENSON LLP
11401 CENTURY OAKS TERRACE
BLDG. H, SUITE 250
AUSTIN, TX 78758

EXAMINER	
DOAN, DUC T	

ART UNIT	PAPER NUMBER
2188	

MAIL DATE	DELIVERY MODE
11/07/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/606,604	GONZALEZ, CESAR A.	
	Examiner	Art Unit	
	Duc T. Doan	2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 August 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

Claims 1-33 have been presented for examination in this application.

Claim 1-33 are rejected.

Applicant's amendments/remarks filed 8/6/2007 have been fully considered with the following results,

The amendment of claim 1 overcomes the rejection of claims 1-3 under 35 U.S.C. 101and 35 U.S.C 112 second paragraph in the previous office action dated 5/4/2007.

The Applicant's remarks for the rejections of claims 1-33 under 35 U.S.C. 103(a) have been fully considered but they are not persuasive. Therefore, the rejections from the previous office action are respectfully maintained, with changes as needed to address the amendments.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4,6,10-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trimmer et al (2004/0153739) herein Trimmer'39; incorporated references Trimmer et al (2004/0034811) herein Trimmer'11; Trimmer et al (2004/0111251) herein Trimmer'51), in view of Anna et al (US Pub 2004/0078639).

As in claim 1, Trimmer'39 describes a system comprising: a virtual device interface (Fig 2: DPA,VTL) , wherein said virtual device interface is configured to allow a primary storage device to be accessed using at least one operation that is substantially the same as that used to control a second storage unit (Trimmer'39's paragraphs 14-15 discloses that by using identical commands (ie.using tape device accessing command), host computer #56 can access data in both disk "primary" storages Fig 2: #54 and physical tape "secondary" off site storage), said virtual device interface is coupled to control said primary storage device and said secondary storage device (see Trimmer'39's paragraph 15, the virtual tape library system capable of electronically copy data , for example, to local disk storage #54 and to remote off site physical tape library), said primary storage device is configured to provide access to data stored on the non-removable storage media (Trimmer'39's paragraph 31 discloses the "primary" storage devices #54 disk configured to provide access to data being stored on the primary storage media), and said secondary storage device is configured to permit access to data stored on the removable storage media (Trimmer'39's paragraphs 15,21 discloses the secondary/off site storage device is a physical tape library with removable tape configured to provide access to data being stored on the secondary storage media).

Regarding the claim's aspect of "said secondary storage unit device comprises removable storage media", Trimmer'39's paragraphs 15,21 clearly discloses the "secondary" storage device is a physical tape device (i.e having removable media).

Regarding the claim's aspect of "said primary storage unit device comprises non-removable storage media". Trimmer'39's paragraph 19 discloses the host incoming data can be stored in a VTL's default storage area, which is typically a non-removable storage area. Trimmer 's 39's does not expressly disclose the non-removable storage area, as a device comprises non-removable storage media. However, Anna discloses a virtual tape library having primary storage device comprises of non-removable storage media (Anna's Fig 2: DASD, paragraph 19 hard disk drive device comprises non-removable disk media storing data in files as a DASD cache, a primary storage device). It would have been obvious to one of ordinary skill in the art at the time of invention to include Anna's file system manager as suggested by Anna in Trimmer'39's system to organizing all the files in a volume in a directory and thereby providing an efficient method of recovering lost or inaccessible data in a volume (Anna's page 4, paragraph 57; page, paragraph 66).

Trimmer'39 does not expressly disclose "a computer readable storage medium comprising program instructions executable" aspect of the claim. However Anna's paragraphs 34,35 and 36 further disclose typically a logic for a storage system can be implemented using modularity of logic modules in various ways such as hardware or software etc..as desired. Modules implemented in software are further stored in memory medium so that they can be read and executed by various processors. Accordingly, one of ordinary skill in the art would have recognized this and concluded that they are from the same field of endeavor. This would have

motivated one of ordinary skill in the art to implement the above combination for the advantage set forth above.

As in claims 2-4,6, the claims recite wherein said virtual device interface is further configured to allow a utility to access said primary storage device as said secondary storage device (claim 2); wherein said virtual device interface is a virtual tape interface (claim 3); said primary storage device (claim 4); a secondary storage device (claim 6). The claim rejected based on the same rationale as of claim 1.

As in claim l0, Trimmer'39 discloses a method comprising

said first type of storage device is a secondary storage device; said scond type of storage device is a primary storage device (Trimmer'39 disk "primary" storages Fig 2: #54 and physical tape "secondary" off site storage), said primary storage device comprises non-removable storage media and is configured to provide access to data stored on the non-removable storage media (Trimmer'39's paragraph 31 discloses the "primary" storage devices #54 disk configured to provide access to data being stored on the primary storage media),said secondary storage device comprises removable storage media and is configured to permit access to data stored in the removable storage media (Trimmer'39's paragraphs 15,21 discloses the secondary/off site storage device is a physical tape library with removable tape configured to provide access to data being stored on the secondary storage media),

access said secondary storage device using the virtual device interface (Trimmer'39 Fig 2: DPA and VTL);

Regarding the claim's aspect of "said primary storage unit device comprises non-removable storage media". Trimmer'39's paragraph 19 discloses the host incoming data can be stored in a VTL's default storage area, which is typically a non-removable storage area. Trimmer 's 39's does not expressly disclose the non-removable storage area, as a device comprises non-removable storage media. However, Anna discloses a virtual tape library having primary storage device comprises of non-removable storage media (Anna's Fig 2: DASD, paragraph 19 hard disk drive device comprises non-removable disk media storing data in files as a DASD cache, a primary storage device). It would have been obvious to one of ordinary skill in the art at the time of invention to include Anna's file system manager as suggested by Anna in Trimmer'39's system to organizing all the files in a volume in a directory and thereby providing an efficient method of recovering lost or inaccessible data in a volume (Anna's page 4, paragraph 57; page, paragraph 66),

Trimmer'39 does not expressly disclose claim's aspect associated with command. However, Trimmer'51 discloses the software modules for the Virtual Tape Library (VTL) capable of converting commands as follows:

wherein said virtual tape interface is configured to create a virtual loader on said primary storage device (Trimmer'51's paragraph 11 discloses the VTL can create/emulate a physical tape device driver (emulation module, corresponding to the claim's virtual loader) for each backend media device. Trimmer'51 paragraphs 32,36 further discloses that the emulation module Fig 2: #58 is capable of interpreting "front end" host accessing commands being issued as tape device access commands; the emulation module #56 utilizes other modules #59. n to convert these commands into particular commands using for the backend device modules. In other words, the

software emulation module can accept host "front end" commands in a first command format (tape command format) and convert to a second command format (disk command format) for the "backend" disk device media. Of course, if the backend devices are physical tape library device, there is not need for this type of command conversion (i.e converting from tape commands to disk command). It would have been obvious to one of ordinary skill in the art at the time of invention to include the virtual tape library modules and methods as suggested by Trimmer'51 in Trimmer'39 system thereby allowing the host to using one set of command to access the backend device regardless the backend devices are physical tape or physical disks (Trimmer's51 paragraphs 32,36).

As in claim 11, the claim recites wherein said secondary storage device is a tape backup unit, and said primary storage device is a hard drive. The claim rejected based on the same reason as presented in claim 10.

Claims 12,18,24,30 rejected based on the same reason as presented in claim 10 above (i.e for same reason discussed in either claim 5 or 10).

As in claims 13-14, the claims recite said creating creates a directory on said hard drive (claim 13); storing information on a virtual tape in said virtual loader, wherein said storing stores information in a file in said directory, and said file corresponds to said virtual tape (claim 14). Trimmer'39 and Trimmer'51 does not describe the claims details associating to a directory. However, Anna further describes data of logical volumes in a virtual tape server are stored in files and in directories structures (Anna's page 2, paragraph 20). It would have been obvious to one of ordinary skill in the art at the time of invention to include Anna's file system manager as

suggested by Anna in Trimmer'39's system to organizing all the files in a volume in a directory and thereby providing an efficient method of recovering lost or inaccessible data in a volume (Anna's page 4, paragraph 57; page, paragraph 66).

As in claim 15, the claim recites wherein said secondary storage device is communicatively coupled to said virtual tape interface. The claim rejected based on the same rationale as of claim 5.

Claims 16,22,28 rejected based on the same reason presented in claim 10.

Claims 17,23,29 rejected based on the same rationale as of claim 11.

Claims 19-20,25-26,31-32 rejected based on the same rationale as of claims 13-14 correspondingly.

Claims 21,27,33 rejected based on the same rationale as of claim 15.

Claims 5,7-9 rejected under 35 U.S.C. 103(a) as being unpatentable over Trimmer'39 et al (2004/0153739; incorporated reference Trimmer'11 et al (2004/0034811)) in view of Anna et al (US Pub 2004/0078639), and further in view of Trimmer et al (2004/0111251).

As in claim 5, Trimmer'39 does not expressly disclose the associated software modules to interpret storage access command. However, Trimmer'51 discloses the software modules for the Virtual Tape Library (VTL) as follows:

wherein said virtual tape interface is configured to create a virtual loader on said primary storage device (Trimmer'51's paragraph 11 discloses the VTL can create/emulate a physical tape device driver (emulation module, corresponding to the claim's virtual loader) for each backend media device. Trimmer'51 paragraphs 32,36 further discloses that the emulation module Fig 2:

#58 is capable of interpreting "front end" host accessing commands being issued as tape device access commands; the emulation module #56 utilizes other modules #59. n to convert these commands into particular commands using for the backend device modules. In other words, the software emulation module can accept host "front end" commands in a first command format (tape command format) and convert to a second command format (disk command format) for the "backend" disk device media. Of course, if the backend devices are physical tape library device, there is not need for this command conversion. It would have been obvious to one of ordinary skill in the art at the time of invention to include the virtual tape library modules and methods as suggested by Trimmer'51 in Trimmer'39 system thereby allowing the host to using one set of command to access the backend device regardless the backend devices are physical tape or physical disks (Trimmer's51 paragraphs 32,36).

As in claim 7, a virtual loader library, communicatively coupled to said primary storage device; and a virtual loader utilities module, communicatively coupled to said virtual loader library (Trimmer'51 teaches the VTL communicates with emulation module, and comprising of: utility functions to obtaining information for a given virtual tape library such as current number of slots; Page 2, paragraph 20; Utility functions to operating tape devices such as moving robot arms; Page 3, paragraph 25).

As in claim 8, the claim recites a main module, communicatively coupled to said virtual loader library, and a configuration file, accessible by said main module, wherein said configuration file comprises information that allows said virtual loader library to create a virtual loader on said primary storage device. The claim rejected based on the same rationale as of claim 7. Trimmer'51 further discloses a configuration file to keep specifications for the emulation

module and to configure a virtual tape library accordingly to the specifications; paragraphs 15-17, Fig 1.

As in claim 9, the claim recites said virtual loader library is configured to allow a utility to access said primary storage device as said secondary storage device. Trimmer'51 page 3, paragraph 25 further discloses the VTL has code modules to carry out utility functions such as copying data to a backup library.

Response to Arguments

Applicant's arguments in response to the last office action has been fully considered but they are not persuasive. Examiner respectfully traverses Applicant's arguments for the following reasons:

A) Regarding remarks at page 10 for the rejection of claims under 35 U.S.C 101 and 35 U.S.C. 112 second paragraph, the amendment of claim 1 overcomes the rejection of claims 1-3 under 35 U.S.C. 101and 35 U.S.C 112 second paragraph in the previous office action.

B) Regarding remarks at pages 10-13 for the rejection of claim 1. Applicant argues that the Trimmer references do not teach the virtual device interface recited in claim 1. Examiner disagrees.

Applicant argues "the DPA is not aware that the VTL is not an actual physical tape library (PTL); Accordingly, the DPA writes data to the VTL in exactly the same format as if the DPA 60 was writing the data to the tape". The argument is not understood, it's not clear why the awareness of VTL as not actual physical interface have any relevance to the fact the DPA as an interface logic providing a device interface to a host such that the host can issue the same

commands (tape commands) to the DPA/VTL as if the host issue these tape commands to the physical tape library PTL.

Applicant argues "An emulator **within** the VTL translates the relevant DPA commands to the format of the VTL so that the commands can be carried out by the VTL....the VTL cannot understand the commands generated by the DPA without the assistance of the emulator.." . The argument is not understood. It's is not clear why the emulator logic considered as a component of the VTL (within the VTL) and capable of translate the host storage access command to any format suitable for the corresponding storage media and thus allowing the VTL as a whole to access any desired storage media. Applicant attempts to differentiate the VTL and emulator is erroneous.

Trimmer clearly states **emulator is a logic within** the VTL capable of translate the host command received by DPA to any number of formats for the destination devices (destination devices can be tape or disk (see Trimmer's 51, paragraph 24 "the emulation module is configured so that it may translated the relevant DPA commands of a variety of DPAs to any number of formats that may be used by the particular VTL... Furthermore a single emulation module may be used to emulate more that one PTL"); Trimmer's 39, paragraph 14 further teach that the DPA commands are of the same format as if the DPA was writing the data to the physical tape or a PTL, therefore the physical tape is created (i.e writing to the destination/tape device) is achieved by simply playback the same command (tape commands) in DPA's log.

In other words, Trimmer's references clearly teaches a virtual device interface comprises logic of DPA and VTL, including emulation logic and of course other logic of VTL and DPA that obviously can not be exhaustive listed/discussed, provides the interface to the host and the

interface to the storage devices such that data can be accessed on these storage devices as discussed in above paragraphs (corresponding to primary and secondary devices).

Regarding Applicant's arguments at page 12 regarding "..which component would be couple to control both primary and secondary storage device. Examiner disagrees. Trimmer teaches a virtual device interface comprises logic of DPA and VTL (see above paragraphs) that coupled to control both primary storage and secondary storage (see rationale in the rejection of claim 1).

Trimmer teaches of the physical tape being created by simply playing back the command in DPA to further emphasize the fact when the backup media is the physical tape, the interface device can simply send the DPA commands to the tape backup device, because the DPA command is already in the physical tape commands format (see Trimmer's paragraph 3, and 10).

C) Regarding Applicant's remarks at page 13 for the rejections of claims 2-4,6, 10-33 that based on the argument for claim 1. They are rejected based on the same reason presented above, item B.

D) Regarding Applicant's remarks at page 13 for the rejections of claim 5 that based on the argument for claim 1. They are rejected based on the same reason presented above, item B.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this office action.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 36 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

When responding to the office action, Applicant is advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist examiner to locate the appropriate paragraphs.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc T. Doan whose telephone number is 571-272-4171. The examiner can normally be reached on M-F 8:00 AM 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hyung S. Sough can be reached on 571-272-6799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

HYUNG S. SOUGH
SUPERVISORY PATENT EXAMINER
11/05/07